

Laparoscopic excision of a large retroperitoneal cyst: Case report and literature review

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Alifa Sabir^{1,2}, Anam Rafique³, Maham Leeza Adil³ , Aiman Idrees⁴,
Huma Sabir Khan⁵ and Muhammad Hanif⁶

Abstract

Retroperitoneal cysts, a rare surgical phenomenon, present diagnostic challenges due to their typically asymptomatic nature. A 62-year-old male presented with a 4-month history of abdominal distension and increased burping. Upon clinical examination, a soft, distended, nontender abdomen with a palpable mass extending from the epigastric region to 3 cm below the umbilicus was revealed. Imaging revealed a 14.6 cm × 15.8 cm × 16.4 cm nonenhancing retroperitoneal lesion, compressing the right ureter and causing mild right hydronephrosis. Multiple gall bladder calculi, an umbilical hernia, and lipomatous lesions associated with adrenal glands were also discovered. Laparoscopic retroperitoneal cystectomy, cholecystectomy, and umbilical hernia repair were performed. Intraoperatively, 150 ml ascitic fluid and 1200 ml cystic fluid were found. This case highlights the intricate clinical presentation of a retroperitoneal cyst, emphasizing the need for surgical exploration. Successful laparoscopic management contributes to the evolving understanding of optimal treatment strategies.

Keywords

Retroperitoneal cyst, laparoscopic surgery, abdominal distension, South Asian ethnicity, clinical presentation, surgical intervention, histopathological analysis, incidental findings, optimal management strategies

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Background

A retroperitoneal cyst is an uncommon surgical disease with an incidence of 1/5750 to 1/250,000.¹ These typically manifest as an unexpected finding due to their lack of symptoms, mainly because they can grow considerably in the retroperitoneal space without manifesting any noticeable signs. Nevertheless, they can also exhibit symptoms, varying from general complaints such as back pain and weight loss to manifestations related to their mass effect, such as abdominal distension and abdominal pain.^{2,3}

There have been reports of associated jaundice and hydronephrosis in some cases that are well explained by the compressive effects on adjacent anatomical structures.^{2,4,5} These cystic lesions can be categorized as either neoplastic or non-neoplastic. Although extremely rare, primary retroperitoneal lesions are predominantly malignant.^{6,7}

Here we explore the case of a male patient with symptoms of abdominal distension and burping. Investigations, particularly imaging, unveiled a large retroperitoneal cyst that was surgically treated, and the patient was successfully discharged.

Case presentation

A 62-year-old male of South Asian ethnicity, presented with complaints of abdominal distension along with an increased frequency of burping for 4 months. The patient had a past medical history of type 2 diabetes for 3 years and hypertension for 15 years, and he was a known case of sleep apnea for the last 12 years. He did not report any nausea, vomiting, altered bowel habits, unexplained weight loss, fever, or pain. An interesting discovery upon questioning was that the patient had a past medical history that was remarkable for

¹Rawalpindi Medical University, Rawalpindi, Pakistan

²Rawalpindi Institute of Cardiology, Pakistan

³Rawalpindi Medical University, Pakistan

⁴Mayo Hospital, Lahore, Pakistan

⁵Benazir Bhutto Hospital, Rawalpindi, Pakistan

⁶PAF Hospital, Islamabad, Pakistan

Corresponding Author:

Maham Leeza Adil, Rawalpindi Medical University, House #9, CAT 2,
Street 49, Islamabad 44000, Pakistan.
Email: mahamleeza@gmail.com





Figure 1. Contrast-enhanced CT scan of the abdomen showing non-enhancing retroperitoneal lesion (arrows pointing at the cyst).

COVID-19 infection 1 month before the patient presented with these complaints. Surgical history was remarkable for an appendectomy 40 years back, a cystolithotomy 40 years back, and a hemorrhoidectomy 10 years ago. On clinical examination, the patient was vitally stable, with a soft, distended, nontender abdomen and a palpable mass approximately 15 cm × 15 cm, extending from the epigastric region to about 3 cm below the umbilicus. It was mobile in a horizontal direction. No palpable lymph nodes were found. Multiple lipomas on the anterior abdominal wall, thighs, and back were also noted.

Initially, an ultrasound was performed, and the report was remarkable for a large cystic lesion in the abdomen that was also causing mild right hydronephrosis, along with mild renal parenchymal changes. Further clarity was achieved with a contrast-enhanced computed tomography (CT) scan of the abdomen, which showed a 14.6 cm × 15.8 cm × 16.4 cm non-enhancing retroperitoneal lesion largely located on the right side and slightly compressing the right ureter. Its anterior extent adjoined the anterior abdominal wall (Figure 1). Another 4.5 cm × 3 cm cyst was also identified in close proximity to the left internal iliac vessel. Additionally, multiple gall bladder calculi and an umbilical hernia were also revealed. Another intriguing finding was that of multiple lipomatous lesions noted bilaterally associated with the adrenal glands. Moreover, the patient also had renal cysts in both kidneys that were consistent with his family history whereby he had reported renal cystic disease in his mother and brother. The patient exhibited grade I increased parenchymal echogenicity on ultrasound, along with a solitary cortical cyst in the left kidney. Kidney function tests returned normal results. A subsequent CT scan with contrast revealed kidneys of normal size, shape, and texture. However, a few thin-walled cysts were observed.

A multidisciplinary team including urologists was involved in treatment planning. Given that the pathology appeared benign and did not result in gross hydronephrosis, the decision was made not to insert a ureteral stent. The team believed that

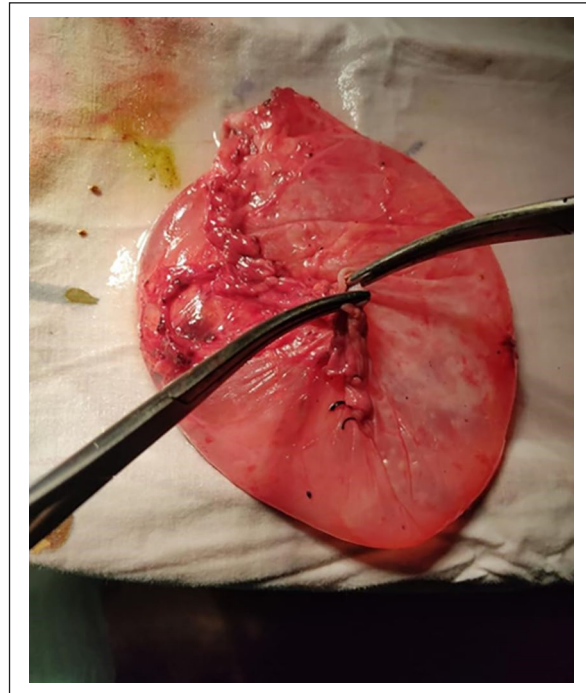


Figure 2. Cyst after being removed.

once the pathology was treated, the compression effect would naturally resolve. Laparoscopic retroperitoneal cystectomy and umbilical hernia repair were planned accordingly. Intraoperatively, 150 ml ascitic fluid was found in the right and left paracolic gutter, and 1200 ml cystic fluid was aspirated. The cyst of size approximately 15 cm × 16 cm × 15 cm, extending to the right from its base at the duodenum, was seen. Controlled drilling, followed by aspiration of the cyst's contents was done, and the cyst was removed using a latex glove as an endobag to avoid spillage in the abdominal cavity (Figure 2). If complete cyst removal proved challenging, the plan included marsupialization. Nevertheless, this approach is not advised due to the risk of cyst re-accumulation. As for the umbilical hernia, a 1 cm defect was identified and repaired via simple primary repair.

Histopathological analysis of the specimen showed the cyst wall lined by flat to cuboidal epithelium, with proliferation of lymphocytes in the stroma. Occasional areas of focal atypia were also seen. However, no evidence of malignancy was seen in the sample. Postoperatively, the patient remained stable with no complications. He was allowed to feed orally after 6 h and was mobilized on the same day. On the fifth postoperative day, he was discharged. No complications were reported on the subsequent outpatient follow-ups.

Discussion

Retroperitoneal cystic lesions are uncommon in presentation, with an incidence ranging from 1 in 5750 to 1 in

250000.¹ Cysts develop within the fatty tissue of the retroperitoneum without any connection to the nearby structures. They are broadly divided into neoplastic and nonneoplastic cystic lesions. Neoplastic lesions include multiple types including cystic lymphangioma, cystic teratoma, and epidermoid cyst, while nonneoplastic cysts include pancreatic and nonpancreatic pseudocysts and hematomas.⁷

Most of these benign clear cystic lesions are derived from the Wolffian duct. Alternatively, some contain tissues from all three germ cell layers and are filled with sebaceous material.⁸ Occasionally, lymphangiomas may also be present.^{9,10}

Retroperitoneal cysts tend to display slow and indolent growth patterns within the connective tissue, staying asymptomatic until they reach a substantial size and exert pressure on adjacent structures.⁵ Classical clinical manifestations specific to retroperitoneal cysts are notably absent. Nevertheless, nonspecific clinical features, including vague abdominal pain and distension, manifest in approximately 50% of cases. If infected or hemorrhagic, they may present with acute abdominal pain.^{11,12}

The diagnostic process involves meticulous history gathering, extensive laboratory tests, and notably, CT and magnetic resonance imaging (MRI). Despite employing various diagnostic techniques, the precise classification of many lesions remains challenging. The decision to pursue surgery hinges on symptomatic presence, apprehensions regarding potential complications such as rupture or infection, and the risk of malignant transformation.¹³

Complete surgical excision is the treatment of choice due to the potential for growth and complications. To minimize recurrence, complete excision should be attempted. In the past, laparotomy has been the preferred approach for treating large retroperitoneal cysts.^{14,15} However, laparotomy has the disadvantage of greater postoperative pain and less desirable cosmetic outcomes. To manage large cysts with minimal incision, decreasing the tumor size by carefully aspirating its contents with minimal spillage is essential to aid in the mobilization and extraction of the tumor.^{16,17} Although previous reports discouraged laparoscopic surgery and aspiration during the procedure for larger cysts, citing concerns about the risk of malignant seeding, that could contribute to the subsequent development of pseudomyxoma peritonei.¹⁸

However, the development of double-balloon SAND catheters for safe aspiration and the use of endobags prior to removal in laparoscopic surgery has reduced concerns regarding the seeding of the abdominal cavity with cyst content.¹⁹ Moreover, the laparoscopic approach allows for precise visualization of the cyst and its surrounding structures through high-definition video imaging systems. This enhanced visualization aids in the accurate identification of critical anatomical landmarks and ensures meticulous dissection and cyst removal while minimizing the risk of inadvertent damage to neighboring organs, nerves, or blood vessels.¹¹ Before resorting to an

open approach, careful consideration should be given to initiating a laparoscopic approach for managing such large cysts. This would result in lower complication rates and quicker recovery times.²⁰ If encountering challenges such as difficult dissection or firm adherence during the procedure, converting to open surgery can be a safe alternative.¹⁶ We conducted a thorough investigation at our center, utilizing all available resources, to explore any potential association between renal and retroperitoneal cysts. Despite an extensive review of both the reported literature and our patient's case, no such association was identified.

Conclusion

Retroperitoneal cysts are rare presentations often diagnosed incidentally. When diagnosed, surgical resection is the mainstay of treatment. Open surgical excision has been the mainstay of treatment. However, the emergence of minimally invasive techniques, such as laparoscopic resection, is gaining popularity due to reduced complication rates and quicker recovery times.

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Author contributions

A.S. Idea conceptualization. Data Curation, Formal Analysis, Supervision, Writing (original Draft + Review); A.R. Data Curation, Writing (original Draft + Review); M.L.A. Data Curation, Writing (original Draft + Review); A.I. Data Curation, Writing (original Draft + Review); H.S.K. Supervision, Writing (review); M.H. Supervision, Writing (review).

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Ethics approval

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Informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

ORCID iD

Maham Leeza Adil  <https://orcid.org/0009-0007-3512-992X>

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